

LISTEN.  
THINK.  
SOLVE.®

# Managing Energy Consumption for Optimal Productivity and Higher Profitability

Phil Kaufman, Business Director  
Industrial Energy Management

# Who We Are

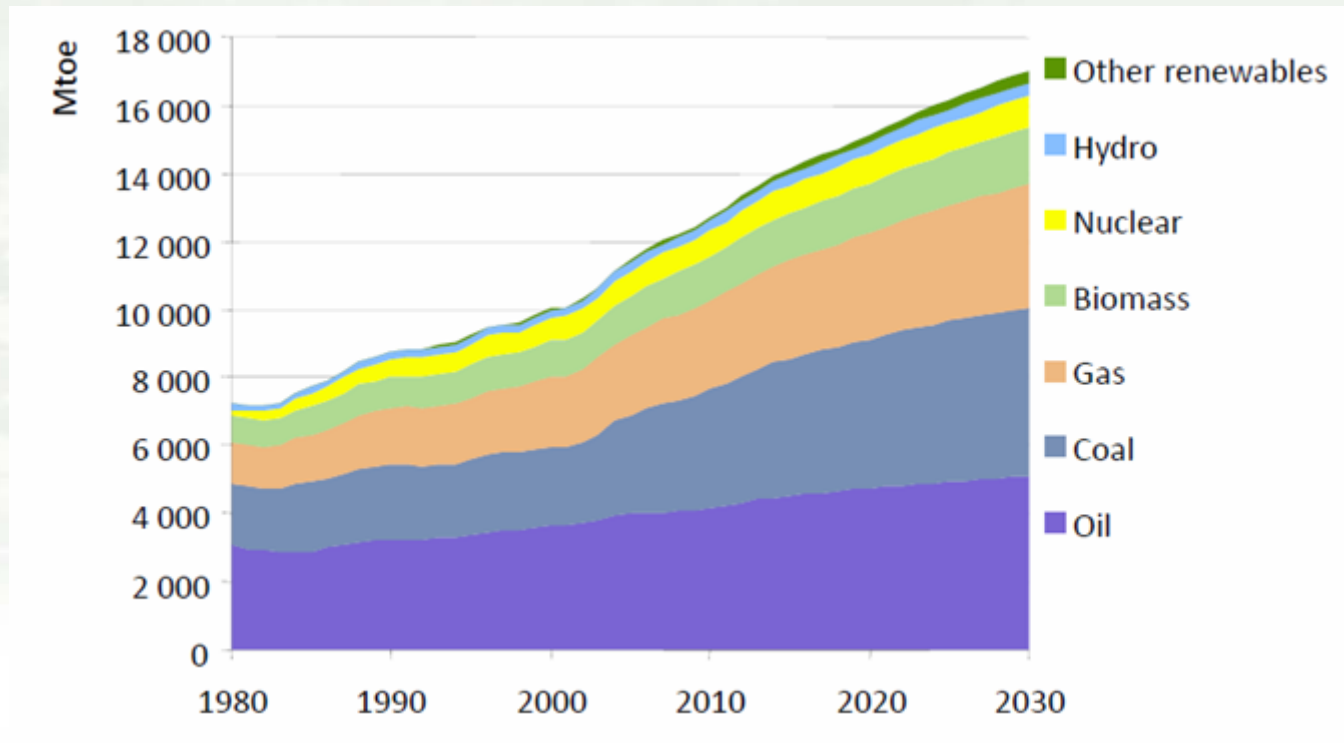
## A Sustainable Company

1. Offer products, services and solutions that help our customers meet their sustainable production goals
2. Design and offer products that meet recognized standards for materials content and environmentally conscious design
3. Improve energy efficiency and reduce GHG emissions
4. Reduce waste and other environmental impacts
5. Continue to execute successful worker safety program
6. Engage all Rockwell employees in greening our company
7. Address sustainability with our suppliers
8. Invest in communities where we work and live
9. Engage external stakeholders
10. Report progress



# Why Energy Management?

- World energy demand is projected to expand by 45% from 2006 to 2030



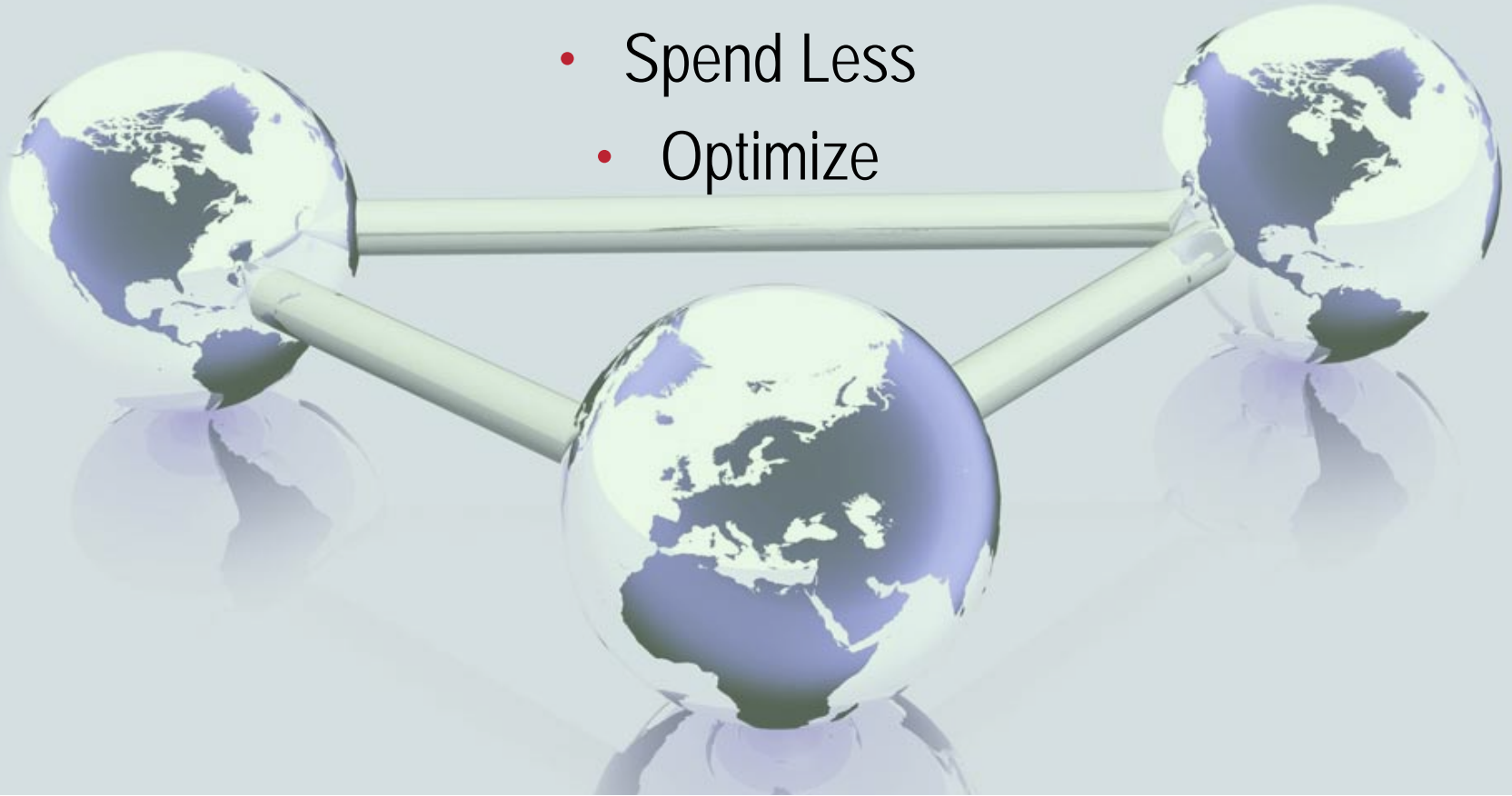
**This growth is not sustainable!**

# Why Now?



# The Three-Dimensional Challenge

- Use Less
- Spend Less
- Optimize



You can find substantial savings ... if you know where to look.

# The Challenge

- The traditional outside-in approach views energy as:
  - An unavoidable cost of doing business
  - Measured by overall facility use
  - Managed only by using less





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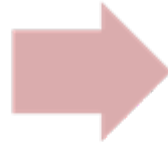
**Leverage the technology you  
already have.**



# Become an Active Energy Manager

## Traditional View of Energy

- A cost
- A bill to be paid
- An expense to be controlled



## Future-Looking View of Energy

- A valuable “raw material”
- Used to grow and sustain a business



# Industrial GreenPrint™

- Seven strategic pillars
- Companies choose the pillars that are right for their business
- More pillars equates to more strength
- Helps reduce costs
- Helps lessens risks

Leveraging existing automation and power control investments helps companies use energy more effectively and invest it more intelligently.

# Rockwell Automation Approach to Industrial Energy Optimization

## Pillars of Energy Management:

- Facility Monitoring
- Production (Plant Floor) Monitoring
  - Energy on the Production BOM
    - Modeling
    - Controlling
    - Responding
    - Scorecarding

Defines the foundation to building a sustainability scorecard and transforming manufacturers into strategic managers of energy

# Foundation: Facility Assessments and Efficiencies

- Evaluate and target areas for improvement
- An ongoing program of assessments and efficiency improvements can be established and used to provide a strong foundation to each of the individual pillars
- Implementation of efficiency programs such as combined heat and power (CHP), intelligent motor control, machine improvements, and so forth
- Discover:
  - Where you are likely to find quick returns
  - What key metrics you should put in place
  - How you can encourage ongoing improvements



# Facility Monitoring

- Understand facility-level energy consumption and demand management to make better equipment runtime decisions
- You can't manage what you can't see.
- Discover:
  - What amount of energy you are consuming
  - When you hit peaks and how that might increase your costs
  - What the quality of the energy is that you are using and how might that affect your production



# Production Monitoring

- Understand energy consumption of the plant floor or production unit level
- Extend data collection and analysis practices down to the plant floor, where plant managers can collect information about energy consumption as it relates to the machines, lines and production units involved in the manufacturing process.
- Discover:
  - How much of your energy use is actually occurring on the plant floor or production unit level versus the facility “envelope”
  - Which pieces of equipment or production assets use the most energy, and when



# Capturing Energy on the Production BOM

- Rockwell Automation's patent-pending approach to energy optimization includes the vision of including energy requirements in resource planning and scheduling decisions in the same manner as the availability of raw materials or other inputs.
- Make proactive production decisions
- Better manage energy as an investment to generate greater return
- Discover:
  - How to plan your energy costs in advance
  - How much energy each production load requires
  - How you can capture energy usage at the unit level



# Modeling

- Consider energy as a process variable to optimize production and schedules
- Optimize production assets
- Forecast the most economical way to manufacture your products
  - Using energy as a variables
- Forecast the full sequence of production scheduling to optimize overall production.
- Discover:
  - How certain production changes will affect energy consumption on a specific production cycle
  - How those changes in energy consumption will affect your profitability and other metrics





# Controlling

- Enable configurable automated optimization of production with energy as a variable
- Drive all data sets into a single automated solution that can identify, model, visualize and present control options or automatically control production changes.
- Discover:
  - How daily temperature, humidity or other environmental changes will affect energy consumption in the facility
  - How you can make and implement effective decisions in a timely manner, given the multiple competing challenges you're faced with every day



# Responding

- Enable response to external market factors to optimize according to real time
- Make external market and regulatory influences part of your overarching energy-management strategy
- Discover:
  - How you should augment your energy consumption visibility and control in preparation for and response to the current economic and regulatory climate
  - What options are available to use SmartGrid innovations to improve your profitability



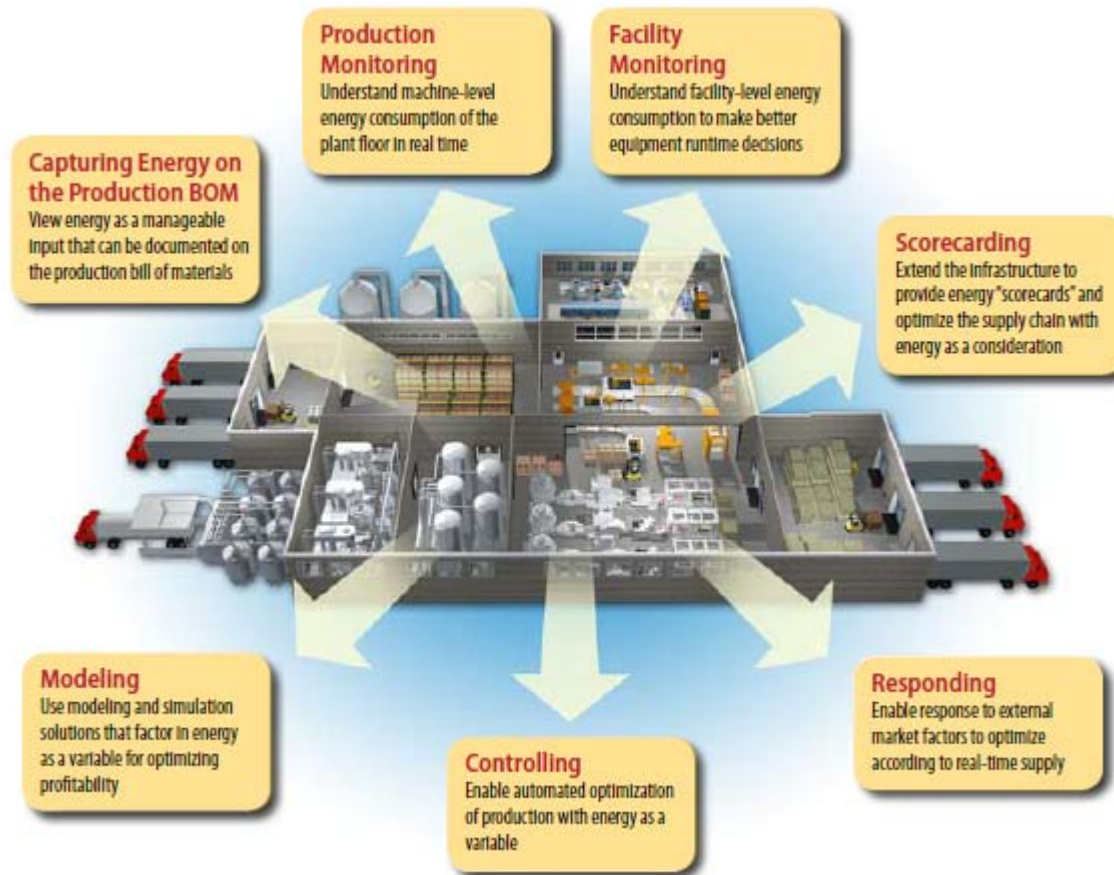
# Scorecarding

- Provide energy “scorecards” and optimize your supply chain with energy as a consideration
- View your supply chain holistically to enhance your sustainability and energy programs
- Discover:
  - How you can maintain your brand position in light of scorecarding initiatives from governments and power retailers such as WalMart
  - As energy price and supply continue to fluctuate, how you can enable flexibility in your supply chain to minimize energy usage



# Industrial GreenPrint™

An “inside-out” approach to industrial energy optimization to help transform your facility from a passive energy consumer to a strategic manager of energy resources.



Energy as a discipline in the Integrated Architecture

# Whitepaper Available for More Information

- Download from [rockwellautomation.com/solutions/sustainability/](http://rockwellautomation.com/solutions/sustainability/)



## Industrial Energy Optimization: Managing Energy Consumption for Higher Profitability

The Rockwell Automation strategy aligns energy consumption with energy demand

Authors: Phil Kaufman and Marcia Walker

### Executive Summary

There once was a time when large corporations viewed their brick-and-mortar offices and storefronts as the main strategic assets in their portfolios. Abiding by the real estate mantra of "location, location, location," it seemed preposterous that a web site could become a major source of competitive advantage. Nonetheless, those who proactively established and maintained an online presence leapt ahead of their competitors; and the slowest to react to the new reality did not survive.

A similar seismic shift is occurring related to industrial energy consumption. Traditionally, energy has been viewed as a cost, a bill to be paid and an expense to be controlled. Those who are ready for the future, however, have matured into a new perspective toward energy and are shifting their operations, especially their manufacturing, to capitalize on the full value of energy as a "raw material," a resource that can be applied to grow and sustain their businesses into the future. Large and small companies alike will need to know exactly where that valuable energy is being used, to the point of tracking it as an ingredient in their recipes or a tangible component in the product assembly - and capturing it as a line item on the production Bill of Material (BOM), or other similar tracking methods, such as Giga Joules or BTUs per ton of product. Managing this information in real time gives them the means to manage it carefully in order to sustain a profitable business.



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